International Emergency Medicine:

Fellowship Training and Career Outcomes

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A Master's Paper submitted to the faculty of

The University of North Carolina at Chapel Hill

In partial fulfillment of the requirements for

The degree of Master of Public Health in

The Public Health Leadership Program

Chapel Hill

2004

Advisor

MD MPH

Second Reader

11-17-04

Date

Abstract

Context: The recent interest and development of international emergency medicine has led to academic fellowships that aid in preparing emergency medicine physicians to work in the development of the specialty outside the United States. The seven current fellowship programs are variable in their curricula, and it is of interest to determine what aspects of the training are particularly valuable in affecting the careers of program graduates.

Objective: The primary objective of this review and proposed project is to determine associations between completion of a fellowship in international emergency medicine and the resulting career outcomes among fellows. Background information collected includes a history of international emergency medicine, as well as the development of the specialty within the United States. Specific measures of exposures and outcomes include fellowship curriculum components and professional roles held by graduates of the programs.

Data: A survey for graduates of the fellowship was developed in coordination with informatics expertise in the Department of Emergency Medicine at the University of North Carolina at Chapel Hill. An extensive literature review was performed to provide a background for the content of questions, academic implications, and project outcomes.

Conclusions: Improved understanding of the aspects of training that effect outcomes in the field of international emergency medicine may enhance efforts to expand the specialty of emergency medicine and develop emergency medicine residency programs abroad.

BACKGROUND:

Global Need for Emergency Medicine

"Emergency Medicine, perhaps more than any other medical specialty, is a reflection of the modern way of life"[1]. As economic growth and modernization create urbanization, population density, mass transportation, and motor vehicles collisions, emergency trauma and cardiac care assume greater importance in the health care delivery system[1]. At the same time, the world's population is aging rapidly, with consequences seen in the increasing prevalence of cerebrovascular and ischemic heart disease[2]. The changing epidemiology of emergency medicine cases caused by urbanization and changing population demographics has been referred to as the "epidemiologic transition"[3].

The dynamic demand for the role of emergency medicine is directly related to specific achievements of regional public health systems. Thus the role of emergency medical systems differs widely across borders, the clarity of the task being directly related to the strength and development of public policy, public health, and the true universality of healthcare[4]. While the health system of a developing country may improve as the nation progresses economically, drastic changes also occur in the health needs of the community[3]. Cost-effective measures, including preventive healthcare, public health care, and education are

often the most appropriate interventions to address the burden of infectious disease as well as trauma. This is especially true in settings of extreme poverty[3].

Socioeconomic shifts, especially those which leave certain groups without regular access to healthcare, are another reason for the increasing need of early emergency medical interventions. This need is compounded by effects of poverty and the marginalization of indigent populations to areas prone to environmental, toxicologic, and infectious disease "disasters"[2]. While this trend is present in varying degrees across the world, developing countries face particular challenges in providing care to their populations. Without the economic power to develop effective healthcare systems, the detrimental effects of infectious diseases, accidental injury, natural and manmade disasters, and violence are perpetuated[5].

History of Emergency Medicine in the U.S.

The recent interest in international emergency medicine may be best understood by considering the background which led to modern emergency medicine in the United States. During the latter half of the twentieth century, the U.S. population became increasingly mobile. Patients increasingly sought emergency healthcare from providers with whom they were unfamiliar, and in hospitals away from home. As people traveled or moved away from their regular family physician, rising numbers of patients presented to emergency healthcare services. Providers were faced with the challenge of giving care to an increasing number of acute problems and often a limited clinical history. This set of

circumstances led to increasing awareness of the state of the nation's emergency departments. Since most hospital admissions at this time were elective[6], patients with primary care physicians were often admitted without evaluation in the emergency department. This lack of dependence on emergency physicians by patients with access to primary care contributed to the fact that emergency departments were often neglected, and described as "ill-equipped and scantily staffed"[6]. The public as well as those in the medical profession recognized that emergency departments (EDs) were not staffed by physicians with the requisite scope of knowledge. There was often only an intern or junior physician present, without adequate backup or supervision[7]. Attention to this problem in the medical profession led to recognition of the need to improve the quality of emergency care.

Development of the Specialty

In 1960, the first full-time physician group officially dedicated to emergency medicine was formed in Alexandria, Virginia. They provided continuous "first contact" healthcare exclusively in an ED, an approach which later became known as the Alexandria Plan. Other physician groups in Flint, Michigan, and Pontiac, Michigan, created a model in which they maintained office practices while providing contracted coverage of the emergency department. This method was identified as the Pontiac Plan[6]. Both of these arrangements continue to be used today.

As interest in providing emergency medical care grew among physicians in the United States, incredible advances were made in the quality of emergency care[6]. Military involvement in both Korea and Viet Nam led the United States to invest in the development of impressive advances for trauma patients. In fact, emergency care for military personnel in Southeast Asia was considered a high priority before the field of emergency medicine was created in the United States[8]. Among injured soldiers who reached medical care during the Viet Nam war, 97% survived[8].

In 1966, a landmark study published by the National Research Council underlined the lack of progress in the treatment of civilian trauma. Entitled "Accidental Death and Disability: The Neglected Disease of Modern Society," this paper drew public and professional attention to the need to improve emergency care[6]. The following statement illustrated the lack of progress in civilian emergency care: "An American… has a better chance for quick definitive… care by… specialists coming out of the jungle… than were he hit on a highway… in the [U.S.]"[8]. Legislation followed, including the Highway Safety Act, which helped establish standards for ambulance and EMS personnel[6].

The first national meeting of emergency medicine physicians was held in 1968 in Arlington, Virginia, involving 32 physicians from 18 states. The initiative ultimately resulted in the incorporation of a national association of emergency physicians that same year, known as the American College of Emergency Physicians (ACEP)[7]. For several years, no formal educational or training programs existed in emergency medicine, though informal "fellowships"

were started for physicians trained in other areas. Still, in 1972, the National Academy of Sciences officially considered emergency medicine "one of the weakest links in the delivery of healthcare in the nation"[8]. The first formal residency program was started at the University of Cincinnati in 1972[7], and emergency medicine was established as the 23rd medical specialty.

Emergency medicine today

Widespread recognition of deficits in quality emergency care led to rapid growth as medical facilities expanded hours to staff emergency rooms 24 hours a day, 7 days a week[9]. In only 23 years, sixty full academic department programs developed in medical schools across the United States. This rapid growth has led to over 132 allopathic emergency medicine residencies in the United States today[10], graduating over 1200 physicians per year[9]. Emergency medicine is now considered a shortage specialty, in 2001 it was estimated that only 60% of practitioners were fully trained and certified, supporting the "great and continuing demand for residency trained, board certified, emergency physicians[9]." Practicing physicians in other fields cover much of the demand for emergency medical personnel[9]. Board-certified emergency medicine physicians often contract privately as individuals or group practices to cover hospital emergency departments. In the past, practice-track board certification was offered to physicians practicing in emergency departments in the United States; now the only way to become board certified in emergency medicine in the U. S. is through an accredited emergency medicine residency program[7]. In 2001, it was estimated

that there were more than 25,000 full-time practicing emergency physicians treating over 100 million Americans yearly[9]. These numbers continue to increase as more people rely on emergency departments for primary care.

History of emergency medicine fellowships

Currently, four emergency medicine fellowships are formally recognized as subspecialties by the American Board of Emergency Medicine. These are medical toxicology, pediatric emergency medicine, sports medicine, and undersea and hyperbaric medicine. The level of training for each of these four subspecialties is assessed by board examinations taken after completion of the fellowship. Additionally, a number of fellowships are available to physicians who have completed a residency in emergency medicine and desire further training in a certain field. While many do not offer additional board certification, these fellows may be eligible for various levels of accreditation in specific areas, as well as benefit from career opportunities in their chosen field after residency. The current emergency medicine fellowships include a range of topics in administrative, educational and clinical fields. A full list of those available to date is given in Table 1[10].

For emergency medicine physicians choosing a career in academic medicine, fellowships offer indispensable training for skills such as grant writing, statistics, study design, and medical writing[11]. In addition, the opportunity to have protected research time, get to know colleagues, and work with career mentors are invaluable aspects of fellowship training[11]. New fellowship programs

continue to be implemented yearly, a trend that follows the rapid pace of development in the field of academic emergency medicine.

Emergency Medicine Fellowships (Table 1)[10]

Academic Emergency Medicine	Medical Education
Administration	Medical Informatics
Cardiovascular Emergencies	Neurological / Neurovascular
Clinical Forensic Medicine	Policy
Disaster Medicine	Pediatric Emergency Medicine
Disaster and Mass Gathering Medicine Research	Research
Emergency Med / Internal Med/ Pediatrics	Research – Clinical Sciences
Emergency Medical Systems	Sports Medicine
Environmental Health	Toxicology
Faculty Development	Toxicology or Pharmacology
Geriatric Emergency Medicine	Transport Medicine
Hyperbaric Medicine	Trauma / Critical Care
International Emergency Medicine	Ultrasound
Injury Control	Wilderness Medicine & EMS
Medical and Occupational Toxicology	

History of international EM

Over the last few decades, as the specialty of emergency medicine expanded rapidly in the United States, this interest also developed in other countries throughout the world[12]. During this time, U.S. physicians have faced an increasingly diverse immigrant population in the emergency department. Important trends which have affected this propensity to present to the emergency department include the fact that immigrants are less likely than non-immigrants to have health insurance or access to primary care. A study by Jacobs et al in 2002,

done as 869 immigrant patients presented to a New York City emergency department, underlined these issues. In this study, 30.8% of immigrants had health insurance, compared to 51.7% of non-immigrants[13]. In addition, the study demonstrated that immigrants were less likely to engage in preventive health practices, further increasing the tendency to seek emergency medical attention. It is worth noting that difficulty in treating diverse patients in the U.S. precipitated American interest and concern for the development of emergency medicine abroad. Indeed, involving American emergency medicine residents abroad will help to clinically treat the population in the United States more effectively[14]. This additional training becomes particularly relevant by considering the effect that training can have on medical treatment for immigrant populations in the U.S.[7].

While physicians must be knowledgeable about domestic medical practices, familiarity with the varied medical and cultural practices of other countries can be of immeasurable help. Another benefit of the increase in cross cultural medical experiences has been the recognition by medical professionals as well as the public of the essential role of emergent patient care. A major factor in the health improvement of any population is directly related to the system's ability to provide prompt diagnosis and management of life-threatening conditions[4]. In addition, with the capacity to respond to natural, technological or man-made disasters, the economic and political vulnerability created by such events can be minimized.

Developing Emergency Medicine Specialty Abroad

The extreme disparities in health care between developing and industrialized nations have led to various forms of international health assistance designed to decrease these differences[15]. Since many countries do not offer training in emergency medicine as a separate specialty, there is a demand for clinical experience in this area for physicians who received their medical training outside the United States. These differences in training have also led physicians abroad to seek assistance from programs in the United States[7]. In response to this need, the last few decades have seen an increase in the number of programs offering experience in emergency care, usually in the setting of American emergency medicine departments. Most of these programs have been designed to instruct physicians trained and/or currently practicing medicine outside the United States. Limited by United States Medical Licensing Examination (USMLE) restrictions, the content of these programs is often described as "observational" rather than involving direct patient care and "hands-on" clinical training[12].

One response that may provide a sustainable solution to this situation is the development of better training programs internationally. The lack of a specialty of emergency medicine in many countries has led residency and training programs outside the U.S. to consult American training curricula for help in developing areas of administrative, educational and clinical instruction. For example, U.S. physicians have played a role in the development of EMS programs, ACLS courses, and instruction in specialized topics such as wilderness medicine[7]. The programs provide trainees with information and education to determine what elements of the U.S. emergency health care system are

appropriate for the country in which they work[12]. The suggested curricula for faculty members in these programs include some of the same aspects of the training provided during a fellowship in international emergency medicine. Some of the difficulties encountered by those promoting the development of international emergency medicine in areas of the world in which emergency medicine has not yet developed include language barriers and a lack of understanding of what the specialty entails[16].

Specific Needs in International Emergency Medicine

In addition to the fundamental development of training programs for physicians and the provision of clinical expertise in the field of emergency medicine, there are several topics that call for additional consideration in developing emergency medicine internationally. A detailed analysis of an individual country's needs, environment, and means to respond to those needs outlines the difficulty in providing a clear standard for certain interests within the field of providing emergency medical care.

Emergency Medical Services (EMS)

Differences in demographics, geography, and economics make global guidelines for EMS development difficult. The demands for pre-hospital care differ drastically according to the circumstances of a particular country. However, certain basic elements at work in the American system can be transposed to developing programs[3]. Specifically, rates of trauma and cardiac illnesses are increasing in many countries. Both are considered fundamentals of

emergency medicine and require immediate treatment for the best patient outcomes. In the U.S., the first EMS developments were stimulated by similar concerns. However, the vast majority of nations today have not experienced the economic growth that allowed for the medical and technological advances supporting EMS progress in the U.S.[3]. While many areas may not have the means to develop programs comparable to those in the U.S., they are at various points along a similar continuum.

Disaster relief

Providing emergency care in disaster and refugee situations is an issue that has been largely addressed by several non-governmental organizations, with some groups originating for that objective primarily. The International Medical Corps (IMC) was formed in the 1980's to provide medical care for Afghan refugees and is especially active in Afghanistan, Pakistan and Bosnia[16]. Doctors Without Borders, or Medicins Sans Frontiers (MSF), is another independent and private non-governmental organization that responds internationally to emergency situations. Both groups have expanded the scope of international medical responses to disasters, especially war situations[17]. MSF was awarded the Nobel Peace Prize for their efforts in 1999. With increasing media coverage internationally, both of these groups have been able to address the need for emergency responses in the most visible method. MSF, which is maintained by physician volunteers who commit to service for a minimum of six months, has played a prominent role in Africa. The organization visits medical schools to educate and recruit future physicians to their cause. The focus of both groups has

been on providing hands-on relief, and therefore they have not dealt with the development of an emergency medicine system[16]. However, by delivering medical relief in situations of war, civil strife, epidemics and disasters, these organizations have helped to globally define an important objective, as well as enhanced the image of emergency medicine internationally[18].

Developing countries

Developing countries face tremendous challenges in providing health care to their population. In some instances, purchasing inappropriate technology would actually divert necessary resources[3]. A substantial investment of time as well as resources is needed to ensure the successful completion of appropriate interventions in the setting of developing countries[3]. Medical scenarios also differ dramatically depending on a number of factors. While infectious diseases, toxicology, and the consequences of environmental forces are supposedly 'shifting' towards a more Western pattern of disease, there is still much to be gained by US physicians who wish to study abroad[19]. Further training in these subjects is essential to plan successful contributions to the provision of emergency care abroad. Additionally important for any intervention, is planning for the evaluation of outcomes and benefits of interventions. This tends to be more difficult in developing countries, adding to the cost of the original project[20].

Fellowships in International Emergency Medicine:

Fellowships in international emergency medicine were developed "to provide academic career training for U.S. emergency medicine residency

graduates who want to make international emergency medicine work a major part of their career"[16]. While individual fellowships differ in curriculum and specific components, certain goals are consistent. Accomplishing objectives has been approached in a number of different ways by different programs.

Needs Assessment

The scope of a nation's medical needs depend on its existing health status, economic condition, political and social structure, and health care priorities. Because of these differences, it is of the utmost importance that individuals working in international health be able to make a logical and individual 'needs assessment' in the communities in which they are involved professionally. Indeed, for "experts" to be most helpful in tailoring an approach to medical needs, physicians must understand the health care system of the area as well as national health care priorities. This information must also be seen in the context of the economic development and societal structure of the country or region[17].

Promotion of Emergency Medicine

Recognition of the need to develop emergency medicine as a specialty in the United States began with an interested group of physician partners. Along the same lines, the development of emergency medicine abroad must also begin with recognition of its necessity by those most closely involved. In fact, outside the U.S., this acknowledgement is perhaps the most important step in the development of emergency medicine. When medical personnel recognize that

emergency medicine encompasses a unique body of knowledge requiring specialist practitioners, support is generated for funding training for these professionals[18]. This is reflected in Bayleygne et al's assessment of an international training program which sought to establish emergency medicine in Ethiopia. The course aimed to identify and prioritize local emergency medicine needs, instruct physicians and nurses in emergency medicine, provide training in the administration of an ED, and enlist the cooperation of government authorities to help interested medical personnel achieve future advances in emergency medicine[5]. However, the authors concluded that the most important achievement of the course was the "realization on the part of the participants of the course and by local health officials that emergency medicine is an essential medical issue to be addressed in Ethiopia"[5]. The importance of encouraging the commitment of a group of interested individuals to the cause of developing emergency medicine within their own country cannot be overemphasized. Interventional courses, programs, and ultimately relationships are some of the ways in which this commitment to emergency medicine development has been achieved in some areas. The development of new techniques to assess and address need, and the improvement of methods that have worked in the past are essential to stimulating interest in further development of international emergency medicine systems.

International emergency medicine education

The development of emergency medicine as a specialty outside the United States has led to a need for training materials and curriculum for education in the

principles of emergency medicine. The teaching of certain topics in emergency medicine has been well developed in EM residency programs within the United States. Thus developing EM programs can benefit from the groundwork laid by these academic programs and avoid "reinventing the wheel" for basic emergency medicine education. Focus areas particularly relevant in developing EM education abroad include resuscitation guidelines, emergency procedures, pre-hospital and hospital-based emergency medicine training[21]. As with other interventions, efforts to expand and improve curriculum components abroad must be based on each country's needs and resources[21].

EMS system development

As with any intervention to develop systems abroad, the first step in EMS evaluation is clear identification of its components[3]. This is particularly important given the various frameworks within which pre-hospital care may be modeled[3]. Overlapping or contrasting components of an EMS system have been shown to be important for avoiding expensive mistakes. A successful EMS needs assessment that illustrates the value of detailed planning was done in Malaysia. The study showed that one implementation that would have cost $2.5 million per year could have saved only seven lives, and four of these persons would have been left with severe neurological injury[3]. Thus, training EM physicians to identify deficits in pre-hospital care and develop effective interventions is an especially important component of the fellowship.

Individualizing the approach to each situation

Assistance in the development of emergency medicine in countries outside the United States must be individualized. As noted above, there is a wide range of opportunities for the involvement of "experts" from American and European emergency medicine systems. However, the situation in developing countries can be difficult to determine, and some interventions may be impossible to implement. A telling example is the case of Namibia, in southwest Africa. The development of emergency medicine as a specialty in Namibia is currently precluded by a number of factors. Its sparse population relies on a state-run system of regional hospitals and clinics as well as a private "EMS system[22]." Geographic barriers and economic realities have led to almost total reliance on South Africa for medical training and patient care. In 1998, there were only four paramedics in Namibia, all of whom trained in South Africa. The one and only Namibian teaching hospital relies on interns who have graduated from medical schools in Cape Town. Individual patient care depends on the South African healthcare system for complex tertiary care problems and high-level trauma[22]. The example of Namibia underlines the issues in countries that have medical training facilities that are small and/or young and therefore must rely on imported personnel. Advancement of emergency medicine in this situation would benefit from the development of an infrastructure and system that could support a new specialty.

Study Description:

Purpose and Rationale:

The purpose of this research is to evaluate the career activities of physicians who have completed a fellowship in international emergency medicine. There is no subspecialty certification board exam after completion of the fellowship, and no measure of how fellows in international emergency medicine use this specialty training during their careers. The reason for a training program in international health is to develop leaders in global health, who are prepared to work within foreign health systems to develop, integrate, and evaluate health care programs internationally[23]. The combination of practical international field experience, research in international health, and formal public health education is particularly well suited for emergency physicians[23]. Their clinical expertise means that they are accustomed to treating a wide range of medical problems in varied patient populations. In addition, emergency physicians are often the most familiar with pre-hospital and disaster medicine[23]. While these skills are invaluable, most board certified emergency medicine doctors have not received training in international medicine and public health. Thus, the initial international fellowship programs were designed to produce physicians "uniquely qualified to meet the demands of clinical and administrative practice in an international health setting"[23].

Specific goals and objectives of the fellowships were presented in 1999 in a proposal that combined the views of experts in the field[24]. Faculty from the departments of emergency medicine of Michael Reese Hospital, Loma Linda University, Hershey Medical Center, Johns Hopkins University, and the University of Pittsburgh recommended guidelines for the fellowship program and

curriculum development[24]. The emphasis was on training to prepare fellows to prevent, as well as react to problems in emergency medicine. Specifically, the group recommended that fellows be taught the skills to assess emergency medicine needs of an international community, to design health programs addressing these needs, and to evaluate the quality and effectiveness of international health programs. The group proposed several components of the program that would serve to help fellows meet these objectives, including research in international health, domestic and international clinical experience, educational seminars and lectures, and opportunities tailored to specific interests[24].

Fellows are also prepared to work with organizations such as the International Red Cross, the World Health Organization, the United Nations' Children's Fund, faith based groups, etc., to improve the public health of people outside the United States[25]. These fellows are in a unique position to influence the health of developing nations and to develop systems that combine the strengths of the system of emergency medicine in the United States with the strengths of specific settings of emergency care in regions outside the US. In addition, fellows may work in smaller international projects, including extended time in providing emergency medicine in a foreign country.

While the objectives of the fellowships were defined by the initial proposal for the curriculum and the specific competencies expected for each program, the career results of the fellowship have not been assessed.

It is reasonable to expect that fellows would be involved in academic emergency medicine, and in programs outside the United States. However, the extent to which the fellows end up using this training during their careers is unclear. Since the fellowships are divided into several different areas, including research, faculty development/education, clinical experience, international field work, and health policy, the specific areas can be assessed separately to identify the topics that have been most valuable. It would also be useful to identify the areas that are less effective in training for careers that involve international emergency medicine work. The purpose of this study is therefore to develop a survey instrument and assess the career activities of physicians who complete fellowships in international emergency medicine. Specifically, the survey questions will assess training and career outcomes in health policy, research, academic medicine, international emergency medicine, and cooperation with organizations of international health.

Career Outcomes for International Emergency Medicine Fellowships Study

This study will serve as a base of background information about current IEM fellowships. It is also a proposal for the evaluation of their effectiveness in producing EM physicians that contribute to academic and international emergency medicine after completion this additional training.

METHODS

Respondents

Fellowship directors:

The directors of the seven existing international emergency medicine fellowship programs will be contacted by telephone using directory listings on the program Web site. In addition, they will be asked to provide the email addresses of physicians who have completed the international emergency medicine fellowship at their institution.

All current fellowship directors will be included, and past fellowship directors will be included only if the current director is unavailable. Individual directors must provide verbal consent to participate.

Fellowship graduates:

All past graduates of the fellowship programs will be contacted by electronic mail using addresses provided by the fellowship directors. Each graduate will receive up to three emails to encourage participation in the study. Informed consent will be obtained via electronic mail. One to two fellowships are awarded at each institution per year, and given the fairly recent development of these programs, the number of fellows who will be contacted may range from 15-40.

Graduates will be included in the study if they are board certified in emergency medicine and have completed one of the seven fellowship programs. Current fellows will be excluded from the study.

The study has been approved by the Human Subjects Committee of the University of North Carolina at Chapel Hill School of Public Health.

Survey instruments

The telephone survey for fellowship directors is a 38-item list of questions regarding the experience of the fellowship director, the structure of the program, the curriculum, as well as fellowship accomplishments. These include international elective rotations for residents and students, cooperation with emergency medicine programs abroad, development of emergency medicine residency programs, and research presentations to conferences in international medicine. Most questions are yes/no, a few are open-ended. Questions for the fellowship directors are shown in appendix A.

The survey instrument for fellowship graduates is a 27-item questionnaire on past fellowship training and professional positions held after completion of the fellowship. The questions were written by the investigators and reviewed by an expert panel. Most questions are in a multiple-choice format. Likert scale questions and several open-ended queries are also included. Questions assess the curriculum of the fellows' training, their personal view of the usefulness of specialty training in their career, current and past involvement in research, academic medicine, international emergency medicine, and work with international health organizations to manage projects abroad or hold leadership roles in these organizations. Questions for fellowship graduates are shown in appendix B.

Survey administration

Verbal consent for participation of the fellowship directors will be obtained by telephone. The directors will then be interviewed by the investigator regarding curriculum components and accomplishments of their program. All fellowship directors will be asked identical questions.

Consent for the web-based survey will be obtained when the fellows access the survey with their assigned login and password. Contact information will be provided so that respondents can inquire about directions or survey content. Three reminders will be sent 3 weeks apart to encourage completion of the survey.

Statistical analysis

Descriptive statistics will be tabulated for the fellowship directors and graduates of the fellowship programs. Categorical variables will be compared using chi-square analysis and Fisher's exact tests. T-tests and one-way analysis of variance (ANOVA) will be used to test for differences in the means for continuous variables. Mann-Whitney tests will be used to evaluate Likert scale items. For all statistical tests, significance will be set at 0.05 using two-tailed tests. The statistical analysis will be performed using the Stata 8.0 software.

Program Descriptions

Johns Hopkins University

The fellowship in international emergency medicine at Johns Hopkins University is offered through the Center for International Emergency, Disaster,

and Refugee Studies (CIEDRS). The 2-year fellowship is intended for emergency medicine physicians interested in pursuing international health practice, research and/or administration, and includes MPH course work as well as research and program activities[26]. Specific program opportunities are in the areas of advocacy, education, and fieldwork[27]. Fellows work in coordination with governmental and non-governmental organizations during their training[26]. Additional activities include involvement with refugee humanitarianism, one of the founding objectives of the CIEDRS organization. Through these fellowships, Johns Hopkins has played a role in emergency medicine residency development in Beijing, and in a five country consortium in Southeast Asia[27]. Fellows receive hospital-based disaster management training and also have the opportunity to learn to assess medical needs and make cost-benefit analyses for countries seeking consulting or advice[27].

Fellowship competencies include completing the requirements for an MPH, and demonstrating knowledge of public health issues as they pertain to developing countries[26]. The curriculum was developed using information from the International Committee of Red Cross Societies (ICRC), the United Nations High Commission for Refugees (UNHCR), Medicins sans Frontiers (MSF), the United Nations International Children's Emergency Fund (UNICEF), and the World Health Organization (WHO). Fellows are expected to conduct research related to international health care and master critical topics in international health including tropical medicine, infectious diseases and disaster management[26].

CIEDRS is a joint academic program between the Department of Emergency Medicine in the John Hopkins School of Medicine and the Department of International Health in the Johns Hopkins School of Public Health[26]. The center was established in 2000 to promote the development of emergency systems to meet the needs of people in less developed settings, including refugees or other displaced persons and victims of natural or manmade disasters. The center addresses these needs through the use of applied research, technical assistance, publications and training to support effective health organizations. Disciplines within the School of Public Health are integrated in program approaches, allowing the application of relevant epidemiology, environmental engineering, management of health systems and human rights[26].

George Washington University (GWU)

The fellowship at GWU comprises various opportunities to learn about emergency medicine residencies and curriculum development abroad. Practical experience in the development of international emergency medicine as a specialty allows fellows to develop strengths in both international education and curriculum development. The extensive experience of this program has produced special expertise in pre-hospital care and training programs[28]. Fellows learn to establish EMS and ED training for resident physicians abroad. The development of emergency medicine as a specialty outside the U.S. is of particular interest, and the program addresses a number of issues in training healthcare personnel abroad.

Specific projects and interventions include physician/nursing leadership management, educational reviews of clinical pathways, establishment of poison control centers and wound management centers, EMS development, system assessments, disaster preparedness, and paramedic/nursing health education. Fellows at GWU have been involved with projects in Estonia, Latvia, and the United Arab Emirates[29]. Fellows also have opportunities for policy and program development experiences with organizations in international health including the Pan American Health Organization (PAHO), the World Bank, and the United Nations.

The fellowship program at GWU lasts for two years, and combines experience in international emergency medicine and health policy development. The curriculum includes the required credits for a Master's in Public Health from the GWU School of Public Health, with a strong foundation in global health policy[28]. This aspect of the program is enhanced by the location of the fellowship in Washington, D.C., which provides access to leaders in health and international development. Fellows are able to interact with authorities in the fields of international emergency medicine and international public health. Opportunities are also available for fellows to participate in advocacy groups for the development of global health policy. With the diversity of options available to fellows in this setting, physicians are able to tailor experiences to their interests in order to meet career objectives[28].

Loma Linda University:

The international emergency medicine fellowship at Loma Linda University is offered in cooperation with the School of Public Health and the hospital Departments of Emergency Medicine and Infectious Diseases[30]. The program is able to take advantage of Loma Linda's multidisciplinary educational and international resources. Administration of the fellowship is handled by the Department of Emergency Medicine and admits one to two fellows per year. To be eligible, applicants must have completed an ACGME-approved residency program in Emergency Medicine[31].

Stated goals of the Loma Linda fellowship in international emergency medicine include training physicians to assess a country's emergency health needs and design programs to address those needs. Fellows also develop expertise in implementation of these programs within existing health systems, and evaluate the effectiveness of international health programs. Various means are taken to achieve these goals, including research, clinical experience in emergency medicine, education and public health projects[31]. In order to prepare fellows for this work, the curriculum elements shown in Table 1 are addressed during the fellowship.

Curriculum of International Emergency Medicine Fellowship at Loma Linda

International Health Administration	Travel Health
International Relief and Development	Environmental Health
Public Health	Emergency Medical Services Development
Disaster Assessment and Response	International Emergency Health Systems
International Health Curriculum	Educational Topics in International Health
Tropical Medicine and Infectious Disease	Community Health

The fellow is considered part of the DMAT team and is able to work with one of the few specifically pediatric DMAT teams in the nation. A one-month resident elective is generally clinically based but may also include a research component. Medical expertise is gained through opportunities in clinics in nearby Mexico, which include exposure to rural medicine and international experience[30]. These rotations are available to both residents and medical students. International project interventions have involved fellows in the promotion of emergency medicine education and training in Papua New Guinea, Tanzania, Guatemala, Panama, Nicaragua, Cuba and India.

New York University at Bellavue

The Bellevue Department of Emergency Medicine has actually been involved in efforts to promote prehospital and emergency departments internationally since February, 2000. With the help of a grant from the Open Society Institute, residents and faculty are sent to Mures County, Romania. Their experience there is described as "medically and culturally intense"[32]. During the time spent in Romania, these physicians care for critically ill patients, ride with prehospital units on ground and in the air, and helped to start the first Poison Control Center in the country[32]. The fellowship offered through NYU was first developed with funding based on the fellow's clinical time at the home institution in 2001. Shortly after, the emergency department at Bellavue established a non-profit organization, the International Society for Emergency Care, to provide

sustained funding for both the fellowship as well as other international efforts of the department[32].

Fellows at NYU have the option of a one or two year program, depending on whether they wish to pursue a Masters of Public Health during that time. The fellow is expected to function as an attending physician in the ED at Bellavue, during which time they share responsibility for grand rounds as well as medical student lectures in New York as well as abroad[33]. The time spent on clinical responsibilities is intentionally minimized to allow ample opportunity to pursue academic goals. They are expected to complete two research projects over the course of the fellowship. In addition, fellows take an active role in the extensive international projects which have already been established by NYU faculty. These projects include involvement with emergency medicine training programs in Transylvania, Romania, Mexico, and Jamaica[32]. Because of the dynamic nature of the ongoing projects, the fellow is able to assume a leadership role thus actively helping in the development of the effort.

The fellow's own project is a central component of the fellowship, and provides an opportunity for the fellow to create a "sustainable operation as the tangible product of the fellowship experience"[32]. Through international clinical experience, didactic education, and the guidance of the fellowship director, fellows develop skills to assess and respond to the needs and resources of a specific area[32,33]. In addition, fellows are trained to successfully obtain funding and maintain operations through the help of NGO's, governmental agencies, and private foundations. The implementation of research projects that identify

outcome measures of certain interventions is emphasized, to assess the productivity of efforts and enhance the academic experience[33].

Harvard University

The IEM fellowship at Harvard is offered through the Institute for International Emergency Medicine and Health (IEMH)[34]. In addition to the fellowship itself, the institute provides educational opportunities to medical students, residents and physicians. The fellowship is one example of the institute's dedication to a global approach for developing improvements to emergency healthcare[34]. During the two-year fellowship program, graduates complete coursework and earn a Masters in Public Health from the Harvard School of Public Health. Past fellows have played significant roles in the development of emergency medicine systems in Africa and the Middle East[34].

A particular focus of the IEMH fellowship is based on the idea that an organized emergency response system is an essential part of any country's public health effort. To that end, a priority of the program at Harvard is to provide structure to clinical programs and resources so that patients may seek emergency care. By creating collaborative relationships with regional leaders, medical personnel, and civil authorities, fellows act to help identify the interventions best suited for a particular situation. Research efforts are dedicated to implementing low-cost strategies which can be easily learned and maintained[34].

Fellows are also involved in exchange programs of clinical skills and knowledge, in which they work with medical service providers from around the

globe. They are directly involved in conducting seminars to train professionals to be first responders. Specific topics are life-saving techniques as well as specialized approaches to life-threatening emergency conditions such as stroke, heart attack, trauma, etc[34]. Other areas of focus include developing a response system to mass-casualty events as well as providing refugee relief and humanitarian aid. The IEM fellowship at Harvard has been in place since 1999, and three fellows have since completed the program[35].

University of Southern California

In the setting of one of the oldest and largest emergency medicine residency programs, fellows at USC benefit clinically from seeing a high volume of recently immigrated patients[36]. The tropical medicine and infectious diseases they encounter as providers often serve as an opportunity to study and teach the cultural and medical influences of a specific case, and its international relevance. In addition, the fellow has the opportunity to participate in infectious diseases courses which are most often given in Peru, England, Thailand, and the USA[36]. If the fellow does take part in this additional training, they are eligible to sit for the national exam of the American Society of Tropical Medicine and Hygiene (ASTMH). Research activities are concentrated in the areas of tropical medicine, development of emergency medicine residencies, and promotion of the specialty internationally[36].

The fellowship is also enhanced by the department's involvement in the development of emergency medicine programs and courses in various areas of the

world. Particularly, the EM residency program in Santiago, Chile has seen much progress since the involvement of USC and the implementation of lectures and learning modules based on the curricula used in Los Angeles[36]. In the past, practitioners from China have worked closely with the department of emergency medicine at USC to form the framework for an emergency medicine training program in Beijing. Residents and fellows have the opportunity to be a part of ongoing efforts to maintain a productive working relationship with these areas[36].

Graduates of the fellowship are prepared to coordinate short-term international exchanges by learning to work with foreign ministers of health, make group travel arrangements, select a site and make needs assessments, as well as planning financially with grant proposals. The fellow is expected to participate in the planning and implementation of various emergency medicine courses that differ according to the resources and needs of a particular area. Topics ranging from basic trauma resuscitation to the implementation of an EMS system catered to the needs and resources of the area are addressed[36]. Unique to the fellowship at USC is the clinical exposure to an emergency medicine jail ward. As the significance of forensic emergency medicine increases internationally, the epidemiology of Los Angeles' gang violence and emerging designer drugs offers an important perspective to fellowship training[36].

Results:

The results will be in two sections -- the answers to the telephone interview and the fellow survey. From the fellowship director interviews, the information gathered will be used to compare the seven programs. The

questionnaire to past fellows in these programs is intended to assess the practicality of the fellowship training, and specifically various aspects of the curriculum. Fellows will be questioned about research, health policy, clinical time spent abroad, faculty positions in their home institution's emergency department, education on medical conditions not commonly seen in the United States, faculty development training, and instruction and practice in implementing emergency residency programs abroad. Fellows will be asked about what has been helpful or educational, and the degree to which the fellow has used the training in his or her career. The questionnaire results will not be used to compare the effectiveness of the fellowships, but to assess the fellowships by those who have completed training. The goals of completing a fellowship have been defined by one author as being "prepared to work within foreign health systems to develop, integrate, and evaluate health care programs on an international scale[24]." The idea behind surveying graduated fellows is to find out what they are in fact doing, and how similar the proposed goals of the programs are to the fellows' career outcomes.

Results from the director interview may include:

---**% of programs that include an MPH
---**% of programs that provide hospital grand rounds on topics in international emergency medicine
---**% of programs provide educational lectures for medical students in the US
---**% of programs provide educational lectures for medical students abroad
---**% of programs are directly involved with the development of an emergency medicine residency abroad
---**% of programs train their fellows in the development of residency programs abroad
---**% of programs offer fellows the opportunity to prepare for and take the American society of tropical medicine certification exam

---**% of programs include clinical experience in infectious disease as part of the curricula
---**% of programs include elective rotations at the home institution as part of the curricula
---**% of programs include international clinical experience as part of the curricula
---**% of programs include specific, focused education in health policy as part of the curricula
---**% of programs include clinical experience in infectious disease as part of the curricula
---**% of programs include training in public health education as part of the curricula
---**% of programs include training in region-specific medical conditions as part of the curricula

---**% of programs include training in the home institution's emergency department as part of the curricula
---**% of programs include training in research methods as part of the curricula

In addition, _____ programs mentioned that they include specific training in emergency ultrasound, and _____ programs provide specific training in disaster management.

Results from the fellow survey may include:

---**% of fellows have worked in academic institutions
---**% of fellows have been involved with research
---**% of fellows would describe their positions as involving a significant amount of health policy work
---**% of fellows frequently work with foreign ministers of health
---**% of fellows plan international projects for either themselves or colleagues
---**% of fellows work full-time providing emergency care to patients
---**% of fellows consider the training in tropical medicine to have contributed significantly to their clinical expertise
---**% of fellows consider their patient load to have a high prevalence of infectious disease
---**% spend 1 month a year or more working on international programs outside the United States
---**% of fellows work with the administration of emergency departments/hospitals outside the US
---**% of fellows have been able to use the region-specific clinical skills(concentration on tropical medicine, for example) if that was a focus of their fellowship
---**% have worked with an emergency medicine residency program

---**% have worked/are currently working in coordination with international health organizations such as NGOs, international red cross, WHO, UNICEF, etc.
---**% are involved with teaching/precepting international medical electives for residents or medical students

Considerations:

While this study includes all seven international emergency medicine fellowships and **** emergency medicine doctors, the numbers are small, making it difficult to draw strong conclusions from the results. Additionally, the career outcomes assessed may have been the result of many opportunities and decisions of the fellows after completion of the fellowship. This makes it difficult to draw conclusions about the association of fellowship factors with actual career outcomes. Assessment of the criteria by which fellowship directors choose fellows might produce insights into the commitment of certain types of residents to a career in international emergency medicine. This might be helpful to fellowship directors in assessing an individual's commitment to research, academic medicine, international health, etc.

Discussion:

This descriptive study can serve as the basis for further investigations of the effects of international emergency medicine fellowships on the career activities of fellows. An estimation of the proportion of graduates working in the fields of international medicine, health policy, academic emergency medicine, research, patient care, or medical projects outside the United States may serve to provide insight into the effect that these fellows are having within the realm of academic medicine and international health. Additionally, by comparing the

curricula of fellowships with the career outcomes of individual fellows, associations may be made between the details of a particular training program and the graduates' chosen career paths. These associations may be important to further direct the improvement and direction of fellowship curricula.

While many physicians provide medical care outside the U.S., these doctors have varying levels of preparation and training for work with foreign public health systems, hospitals and the medical problems associated with specific geographic areas. It is reasonable to think it would be useful for the organizers of such projects to have training in the development of and interactions with health systems outside the U.S. The exposure of a fellow to various foreign health systems can clearly help that fellow in planning future projects in the same area or with health systems that are very similar to those in which they are trained during the fellowship. Of course, other physicians who begin work on international projects in a specific country may be more familiar with that area because of their own country of origin or that of their family, as well as personal travel experience. Also, physicians working abroad for extended periods may eventually become comfortable working in a particular area without having trained in international medicine. It is therefore useful to begin to define the true effect of a fellowship in international emergency medicine as it pertains to the provision of international healthcare by physicians trained in the U.S.

This study may also show associations between a fellow's geographic placement during training, and their further professional involvement with the area. By assessing the fellow's involvement in electing research topics and/or

geographic placements of projects abroad, further implications may be inferred for fellowship directors as they develop and improve fellowship curricula. Medical students and residents would benefit from the description of fellowship curricula as well as their career outcomes. This group may use this information to help decide on options for further training as it pertains to particular career goals.

Future Research:

It may be difficult to know whether a fellowship in international emergency medicine offers more effective training than would extensive clinical experience with a particular program. Since theoretically health systems can differ as much as their countries of origin, it may be worth comparing the effectiveness of the fellowship as preparation for working in a certain area and the effectiveness of extended experience in that area. However, for physicians who plan to work abroad, the fellowship would probably make the transition much easier. While we will not be assessing that during this study, it may be a question for future research as physician interest in training for international medicine increases. In addition, future research may assess the outcomes of the actual fellowship accomplishments, including relationships with hospitals outside the United States, implemented emergency residency programs, courses offered to foreign physicians, management of resident/medical student electives, etc. It would also be useful to examine the outcomes of interventions in particular regions which have received fellows or residents from institutions in the U.S. and

to consider the value for the United States government in funding such fellowships.

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Addendum 1: Interview questions for fellowship directors

Please answer the following questions regarding your **background and professional experience.**

1. How long have you been a fellowship director for international emergency medicine?
   _____ years

2. Do you do most of the work individually or do you have assistants?
   [ ] individual
   [ ] assistants
   [ ] secretary
   [ ] other _____

3. Did you complete a fellowship in international emergency medicine?
   [ ] yes
   [ ] no

4. Do you work abroad?
   [ ] yes
   [ ] no

5. How much time a year do you spend working outside the United States?
   About _____ months

6. Do you have a graduate degree other than MD?
   [ ] MPH
   [ ] MBA
   [ ] _____

Please answer the following questions concerning the **structure** of the international emergency medicine fellowship.

7. What is the length of an international emergency medicine fellowship at your institution?
   [ ] 1 year
   [ ] 2 years
   [ ] 3 years
   [ ] variable, depending on _____

8. How long has your institution had a fellowship in international emergency medicine?
   _____

9. How many fellows have completed the program since its inception?

10. Please describe a typical fellow's year regarding where they spend their time clinically.

Home institution ED	_____ months
Rotations abroad	_____ months
Elective rotations at home institution	_____ months
Other	

11. Are emergency department shifts at your home institution required of the fellow?

[ ] yes
[ ] no

12. If so, how many per month?

_____

Please answer the following questions regarding the role of **academic emergency medicine** within the fellowship program.

13. Is the fellowship associated with an academic department of emergency medicine?

[ ] yes
[ ] no

14. If not, please describe practice setting…

_____

15. Does the fellowship provide educational grand rounds on international topics? [ ] yes
[ ] no

16. Does the fellowship provide educational lectures for medical students in the US?

[ ] yes
[ ] no

17. Does the fellowship provide educational lectures for medical students abroad?

[ ] yes
[ ] no

18. Is the fellowship program directly involved with the development of an emergency medicine residency in another country?

[ ] yes
[ ] no

19. Are the fellows trained to develop emergency medicine residency programs abroad?
    [ ] yes
    [ ] no
    [ ] variable, depending on _____

Please answer the following questions concerning the **opportunity for an advanced degree** during the international emergency medicine fellowship.

20. Does the fellowship include an MPH?
    [ ] yes
    [ ] no

21. If so, is this a required component?
    [ ] yes
    [ ] no

22. If the fellow already has a mph, is the length of the fellowship shortened?
    [ ] yes
    [ ] no

23. Do fellows have the opportunity to prepare for and take the American society of tropical medicine certification exam?
    [ ] yes
    [ ] no

24. Are any other opportunities available for an advanced degree through the fellowship, such as Masters in medical education, MBA, etc.?
    [ ] MEd
    [ ] MBA
    [ ] other _____

Please answer the following questions concerning the **curricula** of the international emergency medicine fellowship.

25. What measures are taken to prepare fellows for medical conditions seen infrequently in the US but are more common abroad?

    Clinical experience in infectious diseases
        [ ] yes
        [ ] no

    Elective rotations at home institution
        [ ] yes

[ ] no

International clinical experience
[ ] yes
[ ] no

Didactic education
[ ] yes
[ ] no

Other _____

26. Does the fellowship at your institution provide specific, focused education in theform of coursework, lectures, or book/journal readings in areas of…
    [ ] health policy
    [ ] research methods
    [ ] medical education outside the US
    [ ] international fieldwork
    [ ] public health
    [ ] education in region-specific medical conditions
    [ ] training in infectious diseases
    [ ] international health or relief organizations
    [ ] health education
    [ ] other _____

Please answer the following questions regarding **research** during the fellowship.

27. Are the fellows expected to develop an independent research project?
    [ ] yes
    [ ] no

28. Do the fellows have the opportunity to present their research at emergency medicine conferences?
    [ ] yes
    [ ] no
    [ ] variable, depending on _____

29. If so, where do they present their research?
    [ ] locally
    [ ] regionally
    [ ] nationally
    [ ] internationally
    [ ] variable, depending on _____

30. How many fellows have presented at national conferences?

_____

31. How many fellows have presented at international conferences?

_____

Please answer the following questions concerning **international experience** during the fellowship.

32. Is the international fieldwork set up by the fellow or the program?
    [ ] home institution
    [ ] fellow
    [ ] variable

33. If the international experience is set up by the program, does the fellow have the opportunity to express a preference regarding the region they are to work in?
    [ ] yes
    [ ] no
    [ ] n/a

34. Is all of the fellow's time abroad spent in an emergency department?
    [ ] yes
    [ ] no
    [ ] variable

35. If not, what other areas do the fellows work in while abroad?
    [ ] pediatrics
    [ ] ob/gyn
    [ ] medicine
    [ ] surgery
    [ ] other

36. Are opportunities provided for the fellows to work with organizations of international health?
    [ ] yes
    [ ] no

37. Does the program work specifically in cooperation with any of the following groups?

WHO	[ ] yes	[ ] no
UNICEF	[ ] yes	[ ] no
Intl Red Cross	[ ] yes	[ ] no
Family Health Intl	[ ] yes	[ ] no
Faith-based organizations	[ ] yes	[ ] no
Doctors Without Borders	[ ] yes	[ ] no
Other NGO's	[ ] yes	[ ] no

Which ones? _____

38. Do fellows work in coordination with foreign ministers of health during the fellowship?
    [ ] yes
    [ ] no

Addendum 2: Survey questions for past fellows

1. In what year did you complete your fellowship in international emergency medicine? _____

Please answer the following questions regarding the **curricula** of the international emergency medicine fellowship that you completed.

2. For the following subjects, did your fellowship provide focused education in the form of coursework, lectures, or book/journal readings?

    a. U.S. health policy
    [ ] yes [ ] no

    b. International health policy
    [ ] yes [ ] no

    c. Research
    [ ] yes [ ] no

    d. Residency training programs in the U.S. in emergency medicine
    [ ] yes [ ] no

    e. International residency training programs in emergency medicine
    [ ] yes [ ] no

    d. Preparation for international fieldwork
    [ ] yes [ ] no

    e. Public health education
    [ ] yes [ ] no

    f. Health education of conditions in specific regions outside the U.S.
    [ ] yes [ ] no

    g. Infectious diseases in developing countries
    [ ] yes [ ] no

3. Please rate the following areas of training in terms of their value to you in your career.

Topic	My Fellowship did not include training in this area	Not at all useful in my career	Some what use-ful in my caree r	Useful in my career	Very useful in my career	Extremely useful in my career
Training in tropical infectious diseases						
Research						
Clinical time spent in home institution's Emergency Department						
International fieldwork						
Public health coursework						
Preparatory education for international fieldwork concerning geographically specific medical conditions						
Preparatory education for international fieldwork concerning health policy						
Experience working with populations abroad						

Experience with patients abroad that have similarities to immigrant populations within the U.S.						
Other _____						

Please answer the following questions regarding your involvement with **health policy** work since completion of the fellowship.

4. Have you participated in developing health policies in emergency medicine since completion of the fellowship?
   [ ] yes
   [ ] no

5. If so, on what level of policy has your work been involved with? (please check all that apply)
   [ ] local
   [ ] state
   [ ] national
   [ ] international
   [ ] n/a

6. Which of the following individuals or groups have you worked with to influence health policy in emergency medicine? (please check all that apply)

   [ ] politicians
   [ ] lobbyists
   [ ] community activists
   [ ] physicians group
   [ ] other individuals or groups
   [ ] None of the above (I have not worked to influence this area.)

7. Have you ever held an administrative role as part of your job description in emergency medicine?
   [ ] yes
   [ ] no

8. Do you currently hold an administrative role as part of your job description in emergency medicine?
   [ ] yes
   [ ] no

9. Have you ever held an administrative role in emergency medicine outside of the United States?
   [ ] yes
   [ ] no
   [ ] N/A

10. Have you ever been the director of an organization or committee related to international emergency medicine?
    [ ] yes
    [ ] no

11. How often have you worked in coordination with foreign ministers of health abroad?
    [ ] in most projects
    [ ] sometimes
    [ ] infrequently
    [ ] never

Please answer the following questions regarding your professional involvement with **clinical emergency medicine.**

12. How much of your current workload is devoted to providing emergency patient care within the United States?
    [ ] none
    [ ] up to 25%
    [ ] 26%-50%
    [ ] 51%-75%
    [ ] 76%-100%

13. How much of your current workload is devoted to providing emergency patient care outside the United States?
    [ ] none
    [ ] up to 25%
    [ ] 26%-50%
    [ ] 51%-75%
    [ ] 76%-100%

14. Do you see a patient load with a high prevalence of tropical infectious diseases?

[ ] yes
[ ] no
[ ] I do not see patients
[ ] n/a

15. If you had increased educational exposure to the treatment for tropical infectious diseases during the fellowship, do you think it has contributed significantly to your clinical experiences?

[ ] not really
[ ] somewhat
[ ] significantly
[ ] extremely relevant
[ ] n/a

Please answer the following questions concerning your involvement with **academic medicine** since completion of the fellowship.

16. How much of your workload is devoted to teaching residents/medical students within the United States?

[ ] none
[ ] up to 25%
[ ] 26%-50%
[ ] 51%-75%
[ ] 76%-100%

17. How much of your workload is devoted to teaching residents/medical students outside the United States?

[ ] none
[ ] up to 25%
[ ] 26%-50%
[ ] 51%-75%
[ ] 76%-100%

18. Since completion of the fellowship, have you worked with the administration of an emergency medicine residency in the U.S.?

[ ] yes, as full-time academic faculty
[ ] yes, as full-time clinical faculty
[ ] yes, part-time academic
[ ] yes, part-time clinical
[ ] no

19. Do you currently work with the administration of an emergency medicine residency in the U.S.?
    [ ] yes, as full-time academic faculty
    [ ] yes, as full-time clinical faculty
    [ ] yes, part-time academic
    [ ] yes, part-time clinical
    [ ] no

20. Since completion of the fellowship, have you worked in an institution that has an emergency medicine residency program?
    [ ] yes
    [ ] no

21. Do you currently work in an institution that has an emergency medicine residency program?
    [ ] yes
    [ ] no

22. Have you ever been the director or assistant director of a fellowship or residency program?
    [ ] yes
    [ ] no

Please answer the following questions regarding your **research experience** since completion of the fellowship.

23. Was research a requirement of your fellowship?
    [ ] yes
    [ ] no

24. Have you completed any research since completion of the fellowship?
    [ ] yes
    [ ] no
    [ ] n/a

25. Have you published any research since completion of the fellowship?
    [ ] yes (please provide citation below)
    [ ] no
    [ ] n/a

26. Have you presented any research since completion of the fellowship?
    [ ] yes
    [ ] no
    [ ] n/a

27. If so, where was your research presented?
    [ ] locally
    [ ] regionally
    [ ] nationally
    [ ] internationally
    [ ] n/a

28. Is the topic of your research related to international medicine?
    [ ] yes
    [ ] no
    [ ] n/a

29. Is the topic of your research related to emergency medicine?
    [ ] yes
    [ ] no
    [ ] n/a

Please answer the following questions regarding your work in **international health** since completion of the fellowship.

30. How much time do you spend working outside of the US each year?

    about ____ months

31. After completion of the fellowship, have you returned to work abroad in the same area in which you were placed during the fellowship training?
    [ ] have not returned
    [ ] only for a visit
    [ ] have returned to work
    [ ] have returned to live either part or full time in that area
    [ ] n/a

32. Have you worked with an emergency medicine residency program outside of the U.S. after completing the fellowship? (please check all that apply)
    [ ] yes, have served as faculty in a program outside the US
    [ ] yes, served as a faculty liaison here in the United States for a program abroad
    [ ] yes, have planned projects in coordination with residencies abroad
    [ ] yes, have held other roles in relation to working with a residency program outside the US
    [ ] no

33. Have you helped to develop or create any emergency residency programs outside the US?

[ ] yes
[ ] no

34. Which, if any, of the following health organizations have you worked with since completion of your fellowship? Please also indicate the extent of your work with each group.

Health organization	**Degree of involvement**			
	None	Peripheral	Moderate	Extensive
W.H.O				
U.N.I.C.E.F				
International Red Cross				
Doctors without Borders (M.S.F.)				
Faith-based organizations				
Family Health International				
Emergency International				
International Federation for EM (I.F.E.M.)				
A.C.E.P.				
S.A.E.M.				
A.A.E.M.				
World Association of Disaster & EM				
European Society for EM				
Asian Society for EM				
International Medical Corps (I.M.C.)				
Pan-Arab Society of Trauma and EM				
Other NGO's				

If you have experience with another organization not mentioned, which one(s)?

35. Have you held a leadership position in an international health organization?

[ ] yes
[ ] no